

Exhibit 4

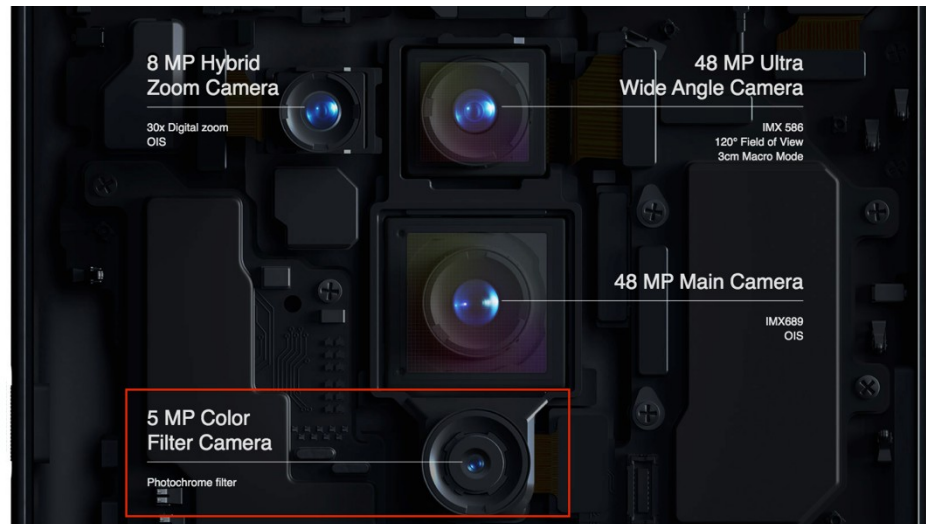
OnePlus – Smartphones (Models having cameras with IR sensitivity. See Product List at end for models)**Infringement of the '112 patent****Claim 1**

1. A method of measuring the magnitude of electromagnetic radiation in a selected location by a mobile communication device, comprising the steps of:

Evidence

The OnePlus smartphone performs a method of measuring the magnitude of electromagnetic radiation in a selected location.

For example, the OnePlus 8 Pro smartphone includes an IR camera (5MP Color Filter Camera). When the IR camera is used to take an IR image the smartphone measures the magnitude of infrared electromagnetic radiation received by the smartphone's IR camera from the location at which the IR camera is aimed.



[1]

The OnePlus 8 Pro's Infrared Camera Can See Through Plastic and More

MAY 15, 2020

DL CADE



The new [OnePlus 8 Pro](#) is a great Android phone for lots of reasons. It's got a 120Hz display, Snapdragon 865, and a quad-camera system with not one, but two 48MP Sony sensors inside. But that's not why it's making headlines. It's making headlines because of its 5MP infrared camera, which can actually see *through* some materials.

[2]

	<p>This effect is made possible by the 5MP 'Color Filter' camera used to create what OnePlus has dubbed the 'Photochrom' effect. But that's just marketing speak. It's no mystery what this camera is: a sensor with the IR filter removed, so it can capture infrared light in addition to visible wavelengths.</p> <p>And while OnePlus expected this mode to be used to create false color images and unique landscape shots, an upshot of this feature is that certain materials like certain thin plastics become see-through, allowing you to see inside remote controls or an Apple TV as if you have X-Ray vision.</p> <p>[2]</p>
<p>providing a mobile communication device that comprises an enclosure, a digital imaging sensor having a first field of view, such sensor is for generating a digital image of the selected location,</p>	<p>The OnePlus smartphone further provides a mobile communication device that comprises an enclosure and a digital imaging sensor that has a first field of view. The sensor is for generating a digital image of the selected location.</p> <p>For example, the OnePlus smartphone includes an enclosure for housing a digital image sensor, among other components of the smartphone. The digital image sensor has a field of view (e.g. outwards from the rear of the smartphone) and is for generating a digital image of a subject or location at which it is aimed.</p> <p>For example, the OnePlus 8 Pro has 48 MP Sony IMX689 image sensor within a housing.</p>

OnePlus 8 Pro

[+ Compare with OnePlus 8](#)

Housing



[1]

Camera

Rear camera - Main

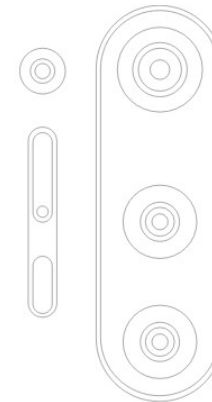
Sensor: Sony IMX689
Megapixels: 48
Pixel Size: 1.12 μm /48M; 2.24 μm (4 in 1)/12M
Lens Quantity: 7P
OIS: Yes
EIS: Yes
Aperture: f/1.78

Telephoto Lens

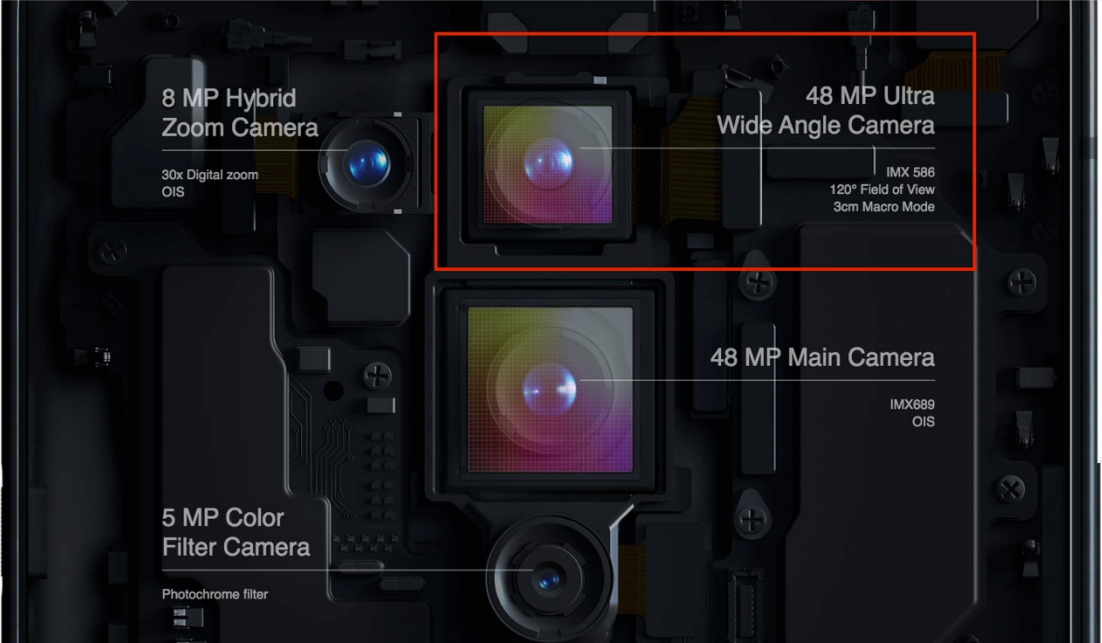
Megapixels: 8
Pixel Size: 1.0 μm
OIS: Yes
Aperture: f/2.44


Ultra Wide Angle Lens


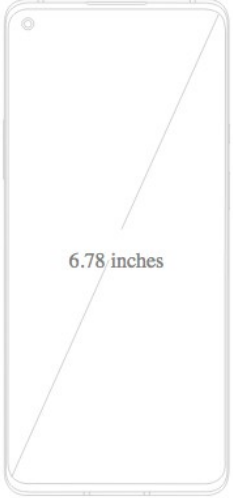
Megapixels: 48
Aperture: f/2.2
Field of View: 120°

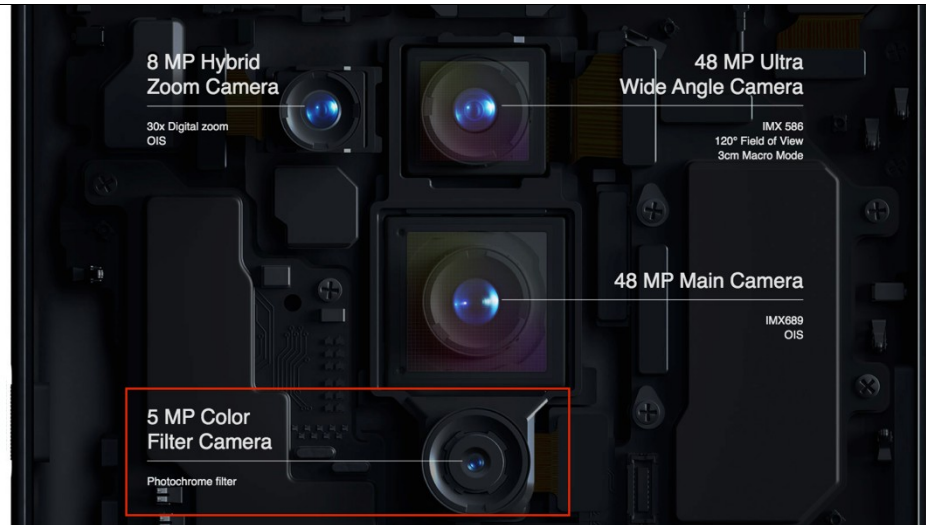


[1]

	<p>OnePlus 8 Pro OnePlus 8</p> <p>Overview Display Performance Camera Design Specs Reviews OxygenOS</p>  <p>[1]</p>
<p>a computer,</p>	<p>The OnePlus smartphone further provides a computer.</p> <p>For example, the OnePlus 8 Pro includes a Qualcomm Snapdragon SoC CPU device and RAM memory, as a computer.</p>

	<p><u>Performance</u></p> <p>Operating System: OxygenOS based on Android™ 10 CPU: Qualcomm® Snapdragon™ 865 5G Chipset: X55 GPU: Adreno 650 RAM: 8GB/12GB LPDDR5 Storage: 128GB/256GB UFS 3.0 2-LANE Battery: 4510 mAh (non-removable) Warp Charge 30T Fast Charging (5V/6A) 30W Wireless Charging</p>  <p>[1]</p>
and an output component for conveying information to an operator;	<p>The OnePlus smartphone further provides an output component for conveying information to an operator.</p> <p>For example, the OnePlus 8 Pro includes an AMOLED touchscreen display for conveying information to an operator.</p>

	<p><u>Display</u></p> <p>Parameters</p> <p>Size: 6.78 inches(The corners of the screen are within a standard rectangle. Measured diagonally, the screen size is 6.78 inches in the full rectangle and 6.55 inches accounting for the rounded corners.) Resolution: 3168 x 1440 pixels 513 ppi Aspect Ratio: 19.8:9 Type: Fluid AMOLED  Support sRGB, Display P3 Cover Glass: 3D Corning® Gorilla® Glass</p> <p>Features</p> <p>Adaptive Display Vibrant Color Effect Pro Motion Graphics Smoothing Reading Mode Night Mode</p>  <p>[1]</p>
<p>coupling to the enclosure a module that is responsive to intensity of the electromagnetic radiation in a selected spectral range;</p>	<p>During manufacturing of the smartphone, OnePlus couples to the enclosure a module that is responsive to intensity of the electromagnetic radiation in a selected spectral range.</p> <p>For example, the OnePlus 8 Pro smartphone includes an IR camera (5MP Color Filter Camera), which is a smartphone module that is capable of measuring the magnitude of electromagnetic radiation in the infrared range. The IR camera is coupled to the enclosure of the OnePlus 8 Pro.</p>



[1]

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[2]

	<p>This effect is made possible by the 5MP 'Color Filter' camera used to create what OnePlus has dubbed the 'Photochrom' effect. But that's just marketing speak. It's no mystery what this camera is: a sensor with the IR filter removed, so it can capture infrared light in addition to visible wavelengths.</p> <p>And while OnePlus expected this mode to be used to create false color images and unique landscape shots, an upshot of this feature is that certain materials like certain thin plastics become see-through, allowing you to see inside remote controls or an Apple TV as if you have X-Ray vision.</p> <p>[2]</p>
enabling positioning the enclosure in a vicinity of the selected location;	<p>The OnePlus smartphone enables positioning the enclosure in a vicinity of the selected location.</p> <p>For example, due to the handheld and mobile nature of the OnePlus smartphone, the smartphone can be positioned such that it is in the vicinity of a subject and pointed thereat to take an IR image of the subject.</p> <p>For example, the OnePlus 8 Pro smartphone includes an IR camera. In order to take an IR photo of a subject, the smartphone needs to be positioned so that the IR camera is in the vicinity of the subject and pointed at the subject. The handheld and mobile nature of the OnePlus 8 Pro model makes this positioning easy to perform.</p>

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[2]

enabling the module for generating a signal

The OnePlus smartphone enables the module to generate a signal that is representative of the electromagnetic radiation.

representative of the electromagnetic radiation;

For example, the IR camera in the OnePlus 8 Pro model generates a signal responsive to the infrared electromagnetic radiation received from the location or subject at which the IR camera is pointed. For example, the IR camera generates an IR image signal e.g. which when processed and displayed certain materials appear see-through because IR radiation penetrates them.

TECH / CIRCUIT BREAKER / ONEPLUS

OnePlus 8 Pro has an accidental X-ray vision filter that sees through plastic and clothes



Seeing into the guts of an Apple TV box. Images: [Ben Geskin / Twitter](#)


/ It's not actual X-ray, though, but infrared

By **JAMES VINCENT**

May 15, 2020, 5:49 AM EDT | 0 Comments / 0 New



[3]

	<p>Infrared sits right below visible light in the electromagnetic spectrum, and is sometimes referred to as “heat radiation,” because that’s how we feel its effects. The world is saturated in infrared, but because we don’t see it, we don’t usually think about it. About half of the energy that arrives on the Earth from the Sun arrives as infrared, for example.</p> <p>[3]</p>
<p>enabling processing said signal to extract information related to intensity of the electromagnetic radiation in the selected location, and</p>	<p>The OnePlus smartphone enables processing the signal to extract information related to intensity of the electromagnetic radiation in the selected location.</p> <p>For example, the main processor in the SoC device processes the signal to extract information of the infrared electromagnetic radiation, in the location at which the IR camera is pointed in the case of the IR camera. The design and manufacture of the smartphone itself enables the SoC device to process the signal.</p> <p><u>Performance</u></p> <p>Operating System: OxygenOS based on Android™ 10 CPU: Qualcomm® Snapdragon™ 865 5G Chipset: X55 GPU: Adreno 650 RAM: 8GB/12GB LPDDR5 Storage: 128GB/256GB UFS 3.0 2-LANE Battery: 4510 mAh (non-removable) Warp Charge 30T Fast Charging (5V/6A) 30W Wireless Charging</p>  <p>[1]</p>

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<p>enabling sending said information to the output component for conveying the information to the operator.</p>	<p>The OnePlus smartphone enables sending the information to the output component for conveying the information to the operator.</p> <p>For example, the SoC device sends the information to the touchscreen display, which causes the display to display an IR image captured with the IR camera. The design and manufacture of the smartphone itself enables the SoC device to send the information to the touchscreen display.</p>



Product List:

OnePlus 8 Pro

References:

[1] OnePlus Website - OnePlus 8 Pro

<https://www.oneplus.com/us/8-pro/specs?from=8pro>

[2] PetaPixel - The OnePlus 8 Pro's Infrared Camera Can See Through Plastic and More

<https://petapixel.com/2020/05/15/the-oneplus-8-pros-infrared-camera-can-see-through-plastic-and-more/>

[3] The Verge - OnePlus 8 Pro has an accidental X-ray vision filter that sees through plastic and clothes

<https://www.theverge.com/2020/5/15/21259723/oneplus-8-pro-x-ray-vision-infrared-filter-see-through-plastic>

[4] iFixit – OnePlus 8 Pro Teardown

<https://www.ifixit.com/Teardown/OnePlus+8+Pro+Teardown/133351>

[5] YouTube: Geardo – OnePlus 8 Pro Teardown

<https://www.youtube.com/watch?v=7txEX-SiPKY>